
VICTORIAN *E*NTOMOLOGIST

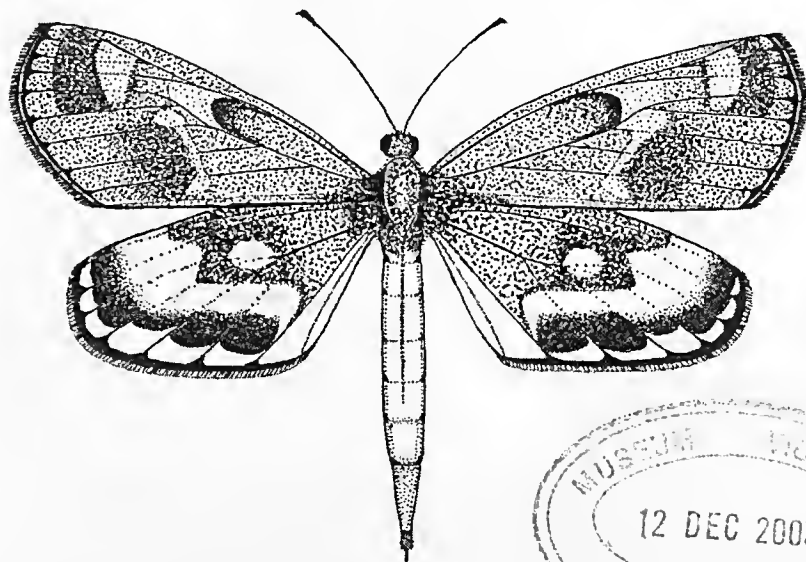


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News Bulletin of The Entomological Society of Victoria Inc.

THE ENTOMOLOGICAL SOCIETY OF VICTORIA (Inc)

MEMBERSHIP

Any person with an interest in entomology shall be eligible for Ordinary membership. Members of the Society include professional, amateur and student entomologists, all of whom receive the Society's News Bulletin, the Victorian Entomologist.

OBJECTIVES

The aims of the Society are:

- (a) to stimulate the scientific study and discussion of all aspects of entomology,
- (b) to gather, disseminate and record knowledge of all identifiable Australian insect species,
- (c) to compile a comprehensive list of all Victorian insect species,
- (d) to bring together in a congenial but scientific atmosphere all persons interested in entomology.

MEETINGS

The Society's meetings are held at Melbourne Museum, downstairs at Infozone, Carlton, Melbourne: Melway reference Map 2B J10 at 8 p.m. on the third Friday of even months, with the possible exception of the December meeting which may be held earlier. Lectures by guest speakers or members are a feature of many meetings at which there is ample opportunity for informal discussion between members with similar interests. Forums are also conducted by members on their own particular interest so that others may participate in discussions. Tea and coffee facilities available at club meetings.

SUBSCRIPTIONS

Ordinary Member	\$20.00 (overseas members \$22)
Country Member	\$16.00 (Over 100 km from GPO Melbourne)
Student Member	\$12.00
Associate Member	\$ 5.00 (No News Bulletin)

Associate Members, resident at the same address as, and being immediate relatives of an ordinary Member, do not automatically receive the Society's publications but in all other respects rank as ordinary Members.

Cover design by Alan Hlyman.

Cover illustration: The pale Sun Moth, *Synemon selene* Klug, is an endangered species restricted to perennial grassland dominated by *Austrodanthonia* in Western Victoria. It is now extinct in SA, and was presumed extinct in Vic. until its rediscovery, in February 1991, by the late Frank Noelker and Fabian Douglas. The Victorian Populations are parthenogenetic with all specimens comprising females, a most unusual trait in the Castniidae. Illustration by Michael F. Braby.

MINUTES OF THE GENERAL MEETING, 17TH OCTOBER 2003

The President opened the meeting at 8:10 pm.

Present: P. Carwardine, I. Endersby, M. Endersby, R. McMahon, N. Porch, A. Rakimov, D. Stewart, R. Vagi, K. Walker.

Apologies: D. Dobrosak, D. Hilton, A. Kallies, P. Marriott, J. Tinetti, G. Weekes.

Minutes: Minutes of the meeting of 15th August 2003 were accepted
M: K. Walker, S: P. Carwardine

Correspondence:

Science Talent Quest bursaries have been awarded to Julia McCoey, Balwyn High School, Intermediate Science Photography 'The birth of a butterfly', and Eve Abdulla and Natasha Clarke, Melbourne Girls Grammar - Morris Hall, Lower Primary Experimental Research 'Pond coverings that prevent mosquito reproduction'.

Treasurer's Report:

Account balances are:

General account: \$6,920

Le Soeuf account: \$3,821

Six members are still unfinancial and their membership will be terminated at the next Council meeting.

Editor's Report:

More articles are required for the next issue. The transition of editorship is now complete and D. Dobrosak is thanked for his assistance in this process.

General Business:

- N. Close, B. Medlin and A. Rakimov were elected to membership. Applications have been received from J. Deutscher, J. Kyval and T. Tantar and they will be considered at the December meeting.
- P. Carwardine confirmed details of the October excursion to Gilwell Park, Gembrook

Speaker:

Nick Porch presented his talk 'Biogeography and ecology of subfossil beetle assemblages in southeastern Australia spanning the last two million years'. From 58,000 records and 9,800 locations, with 1 - 90 taxa per site, Nick has established the climatic requirements of extant beetle genera and species. Using Bioclim modelling he has determined potential regions of Australia where these could exist. Plotting the species on to temperature /rainfall charts shows clumping of useful diagnostic taxa. These climate space diagrams also show temperature and rainfall conditions where the species might exist but are no longer present in Australia. Some taxa are not of use because they inhabit a very broad range of climate while others are too restricted, e.g. to one waterfall catchment. The use of indicator assemblages is needed to overcome these difficulties. Once the modern climate ranges for assemblages have been established they can be extrapolated to similar species groups in the subfossil record. Examples from the Story Creek Basin, Daylesford, Victoria, Yarra Creek, King Island and Lake Keilambete, western Victoria were used to compare results from the pollen record and the beetle assemblages.

Exhibits:

- I. Endersby gave a brief overview to the Order Hemiptera and distributed a small booklet describing the major families. This was to complement D. Stewart's display of Hemiptera specimens which were contained in a case made by the late 'Zoo' Le Soeuf.
- P. Carwardine showed the recent Australian stamp issue featuring insects.
- R. McMahon exhibited a fossil beetle from an American tar pit.

The meeting was closed at 9:35 pm.

Butterflies of Kangaroo Island

L. Hunt

2 Chelmsford Ave., Mitcham SA 5062

Introduction

Fisher (1985) summarised the cumulative knowledge of the butterflies of Kangaroo Island at that time along with relevant information about the geography and vegetation of the Island. He also made predictions, based on knowledge of the foodplants on K.I., of species abundance as well as for flight periods; the Island however produces some surprising results for these parameters. This paper summarises field work done by the author in recent years, taking into account observations by several others.

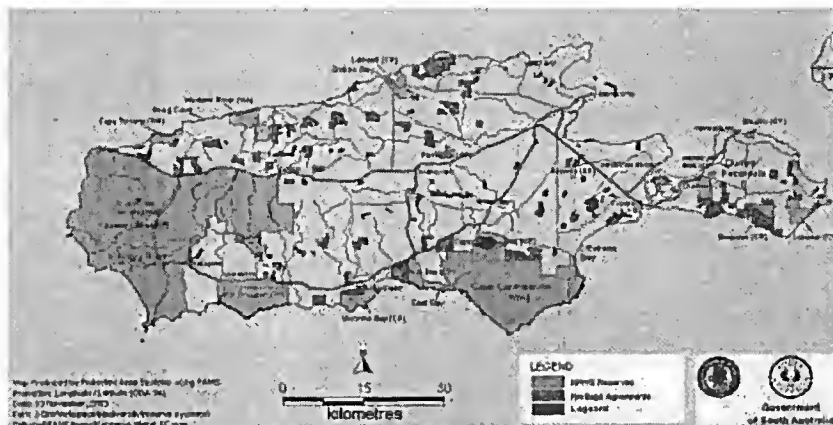
The species list now includes 27 species. *Vanessa itea* (Fabricius, 1775), *Lampides baeticus* (Linnaeus, 1767) and *Theclines thes miskini miskini* (T. P. Lucas, 1889) were not in Fisher's list but *V. itea* was recorded for K.I. by Waterhouse and Lyell (1914). *Danaus plexippus* (Linnaeus, 1758) is included only on the basis of the one observation recorded by Fisher (1985).

Kangaroo Island is about 150 km long (east-west) and is variable in width up to about 55 km. The Island is separated from the mainland (Fleurieu Peninsula) by Backstairs Passage which is 13 km wide at the narrowest point. This isolation probably occurred about 9500 years ago (Lampert, 1979). The cool wet winters and warm dry summers are somewhat moderated relative to the mainland by the proximity of the sea. Sunshine hours are quite high, more so in the east where the rainfall is about 500 mm rising to as much as 900 mm in part of the central west. The dominant central western undulating low plateau slopes gradually towards the east and west from a high point of 307 m near Snug Cove and is being eroded by incising streams around its edges. Gravelly ironstone lateritic soils predominate on the plateau with some sands and sandy loams mainly in the valleys. These poor ironstone soils originally supported various mallee and/or stringybark heath associations, often dense, with some areas of Sugar Gum woodland (even forest) nearer the coast and occurring (with other eucalypts) in corridors along often gahnia-lined creeks and rivers. There are very low butterfly numbers in the dense mallee bushland. The other soils of major significance are calcareous sands with or without exposed limestone and including sand dunes. These occur along much of the south coast and elsewhere on Dudley Peninsula and the west coast and again originally supported mallee scrub but with a higher proportion of open areas of low heath. There is a greater variety and number of butterflies in these areas. Most butterfly foodplants occur in both major soil types however *Gahnia duستا* only occurs in calcareous sands and these support a higher density and frequency of *Charetrum glomeratum*. Lepidosperma species are more prevalent in the ironstone gravels. *Gahnia trifida* and especially *G. sieberiana* are more prevalent in the higher rainfall and slightly cooler western areas occurring not only along streams but also on roadsides and other disturbed areas and in many small lagoons and marshes. *Gahnia clarkei* (Fisher, 1985) is now considered not to occur on K.I. Coastal vegetation contains several butterfly foodplants, most significantly *Adriana quadripartita*, *Gahnia lanigera* and several species of saltbush. Another very low-growing gahnia *G. hystrix* occurs coastally.

There are many lagoons on the Island – some over 100ha and many between 5 and 50ha (about 100). These provide additional habitat for *Gahnia* species especially *trifida*. There is a small occurrence of *G. filum*. Rising salinity is affecting some lake environments. There is a limited but dense occurrence of *Amyema melaleuca* on *Melaleuca halmaturorum* at White and Rush Lagoons – this is the only potential foodplant mistletoe species on the Island (only *Lysiana exocarpi* otherwise) which is remarkable given the presence of *A. preisii* and *A. miquellii* on the adjacent Fleurieu Peninsula. The reported sighting of *Ogyris abrata*

(Westwood, [1851]) at Rocky River (DeBaar and DeBaar, 1993) is almost certainly erroneous as the mistletoe foodplant has not been recorded.

Clearing on the Island has been relatively recent, beginning in earnest after World War II when 174 soldiers were allocated land for farming. Consequently much land was cleared in the 10 years post 1947 and in this period the Island's population doubled. Excellent areas of native vegetation were preserved in a system of national and conservation parks mainly along the south coast and in the west (Flinders Chase was dedicated in 1919 after a long struggle and is the second oldest Park in South Australia). There are also very significant privately owned conservation areas some of which are preserved under Heritage Agreements. The retention of native vegetation on roadsides and within farms is better than the mainland and often of good quality. The cleared pasture land has benefited a few common species.



Location of National and Conservation Parks, Wilderness Protection and Heritage Agreement areas. Map reproduced with permission from Department of Environment and Heritage.

Species List

Hesperiidae

Hesperilla idothea clara (Miskin, 1889)

Data is still limited (Fisher (1985), M Moore, L Hunt - 6 records in all) but includes specimens from three separate streams in the western end. Almost certainly this butterfly occurs in low density along all the streams in the west in areas of native vegetation and also in nearby cleared areas that have retained tall trees and gahnia along creeklines. This species appears to only utilise *G. sieberiana* and *G. trifida* under or near a tree canopy and hence the population would have contracted when major clearing took place. South Australia has few remaining streams running through unadulterated native vegetation and a high proportion of these are on Kangaroo Island. Most of the above specimens emerged in late November or early December with one in January.

***Hesperilla donnyssa donnyssa* (Hewitson, 1868)**

The two subspecies *delos* and *diluta* were not recognised by Braby (2000) and the K.I. population is regarded as all *H. d. donnyssa*. This butterfly is found throughout the Island including on farmland with remnant *Gahnia* but with higher populations in the south and west, usually being present when its foodplants (*Gahnia sieberiana*, *trifida* and *deusta*) are present (see introduction). Densities are low to medium on *G. deusta* and on the larger *Gahnia*s along creeklines but higher on the latter foodplants in more open areas including roadsides. Parasitisation by species of *Ichneumonidae* and *Chalcidae* can affect up to 30 percent of the population in some locations. The main adult flight period is November to early December. On a number of occasions larvae of markedly different stages were found together and almost mature larvae were found in late December, all on *G. sieberiana* and *trifida* in the central west. A western K.I. larva taken and bred in the summer heat of Adelaide produced an adult on the 30th January. These observations indicate that there is a late summer/March flight of this species. Occasional specimens also occur through December and January.

***Hesperilla chrysotricha cyclopsila* (Meyrick and Lower, 1902)**

Now rare on Fleurieu Peninsula this skipper (formerly called *H. c. leucosia*) has a robust population on K.I. breeding on *Gahnia sieberiana* and *trifida* across the Island excluding Dudley Peninsula, often being found together with *H. d. donnyssa*. It is more prevalent in the west with low densities along vegetated streams but achieving higher densities on more exposed foodplants in swamps, roadsides etc. In these situations it often outnumbers *H. d. donnyssa* and on some stands is the only species present. Again it suffers moderate to high levels of parasitisation by a species from each of the *Ichneumonidae* and *Chalcidae* families. The main emergence of adults is in the third and fourth week of November with the overall flight period from late October to mid December.

***Motosingha trimaculata* (Tepper, 1882)**

The overall population of this butterfly has been much reduced as it would likely have once occurred in most of the more open areas of the ironstone plateau where the foodplants *Lepidosperma viscidum* and *L. carphoides* are quite common. Moderate numbers of these butterflies were seen flying and hilltopping in the most easterly section of Flinders Chase over several years. This area contains a good proportion of low to medium banksia heath as well as good hilltops but has been subjected to fire too often in recent years. There is a remnant population in the small Beyeria CP south of Kingscote where the butterfly breeds on *L. viscidum* (males even 'hilltop' on a small bare mound of earth). It has also been recorded at Rocky River in December (Fisher, 1985) and recently at Vivonne Bay in November (D. A. Young). This species should be present in suitable habitat (very dense mallee may be unsuitable) throughout the Parks of western K.I. and also in more open areas near the south coast where *L. viscidum* occurs. The adult flight period is November into December.

***Antipodia atralba* (Tepper, 1882)**

There is a small area of *Gohnia lanigera* on the seaward slopes of Box Head near Stokes Bay on the north coast (but may have a wider occurrence). Several visits established that there is a low to medium density population of this species there. High levels of parasitisation by a small wasp hold the population in check. Based on egg and larva evidence there are 2 flight periods – Oct-Nov and Feb-March. This species has also been recorded near the south coast at Seal Bay in November by Fisher (1985) who stated that the larva fed on *Gohnia deusta* and at Vivonne Bay also in November (D. A. Young). This means the species should be present near a significant proportion of the south coast.

Pieridae

Eurema smilax smilax (Donovan, 1805)

With no records of the foodplants of this butterfly on K.I. it only reaches the Island from across the sea in the course of its migratory flights. It appears as isolated specimens or in low numbers in a high proportion of summers most often in late October and November but is also recorded in January and in March (following gale force N-NW winds). Several butterflies were observed in late October 2001 following a significant migration through the Adelaide region early in the month. Locations recorded range from Dudley Peninsula in the east to De Mole River in the west.

Delias aganippe (Donovan, 1805)

In addition to the specimen in the SA Museum labelled "K.I., J Wright" a butterfly was taken in September 1977 near the south coast by M. Moore. On 18th September 2001 there were 2 males hilltopping at Prospect Hill and a further specimen was at this location on 7th November 2002. Given the time spent in the field by the author and others this species appears to be very rare on K.I. with September being the most likely time. Foodplants present on the Island include *Exocarpus cupressiformis* which is uncommon and *Amyema melaleucae* which only occurs in a small area. It is possible that there is occasional migration to the Island but there is probably a small local population.

Belenois java tentonia (Linnaeus, 1768)

This is another species for which there is no foodplant on the Island but is well known for its often large migratory flights. These reach the Island quite regularly, usually between late October and early December. Sometimes just a few are seen but in some years large numbers appear across the whole Island. Fisher (1985) reported the observation of butterflies flying south over St. Vincent Gulf, stating that flights begin in the northern Flinders Ranges. It is more likely that large migrations come from further afield as the species breeds in far north east SA as well as NT, Qld and NSW. A massive migration occurred in late November 1999 with many thousands of butterflies moving through the Adelaide region and across the length of K.I. The general direction of flight most often observed is southwards. D. A. Young has observed butterflies flying out to sea at Vivonne Bay in a south easterly direction.

Pieris rapae rapae (Linnaeus, 1758)

This species is common and widespread but rarely seen deep into areas of native vegetation. Foodplants include introduced crops and weeds of the *Brassica* genus including Canola which is grown commercially. Flight period is from early spring to late autumn and adults may be seen occasionally in winter.

Nymphalidae

Geitoneura klugii (Guérin-Ménéville, [1830])

The smaller of the two browns on K.I., this is quite a common butterfly inhabiting most areas where both grass and trees grow. It breeds on many native and introduced grasses. Clearing has probably increased the population of this species especially due to the retention of native vegetation corridors and areas in farms and roadsides. The single annual brood produces adults in November and December living for about 3 months. Eggs are laid on or near dry grass and do not hatch until triggered by moisture and/or fresh grass, hatching over an extended time period. The butterfly is most common on Dudley Peninsula and rare or absent in much of the far western end of the Island. Males hilltop quite strongly.

***Heteronympha merope merope* (Fabricius, 1775)**

At certain times and places present in some profusion this attractive brown is found in similar habitat to *G. klugii*. It uses the same foodplants. The adults begin emerging mid to late October but only an occasional female is seen until January when the males begin to die out. By March only females are seen and these fly as late as early May laying eggs in the vicinity of fresh grass. Again adult numbers are highest in the east and very low in parts of the west (but higher than *G. klugii*).

***Junonia villida calybe* (Fabricius, 1787)**

With native and introduced foodplants (including *Plantago* spp., *Centaureum spicatum*, *Goodenia* spp. (7), *Scaevola* spp., *Portulaca oleracea* and *Veronica* spp.) widespread on the Island this butterfly can be moderately common between September and April with probable peaks in spring and autumn and occasional butterflies in winter. It is not present as generally as *V. kershawi* (specifically on pasture land). It can often be seen right on the (north) coast including at clifftops (is at ease in strong wind) and also in townships. This species is also migratory.

***Vanessa kershawi* (McCoy, 1868)**

A common butterfly whose habits are not fully understood but is highly mobile and migratory. Native foodplants on the Island include species of *Brodiaea*, *Cyrtosephalum*, *Helichrysum*, *Gnaphalium* and the introduced *Carduus* and *Arctotheca*. Clearing has aided this species especially as it does well in open spaces. The foodplant *Arctotheca calendula* (Capeweed) is prevalent in pastures.

In the second week of June 1995, this butterfly was encountered frequently, especially on Dudley Peninsula. It can be numerous but fluctuating from early August until December with reduced numbers through to April. Foodplant supply builds up through winter and annuals largely die off by December when the population contracts to locations (including coastal) where foodplants remain in good condition. Given the strong migratory tendencies of this species it is quite possible that movement to and from the Island occurs.

***Vanessa itea* (Fabricius, 1775)**

The population of this species may have historically suffered decline due to the clearing of its native foodplants *Parictorio debilis* and possibly *P. cardistegra* but increased again because of the spread of *Urtica urens* (Stinging Nettle) with increasing human activity. The Butterfly ranges throughout the Island including townships but is usually not common. Being tolerant of cool conditions it is on the wing from August to late autumn and even on sunny days in winter, being most numerous in spring, declining as its foodplants are affected by summer dryness and heat.

***Danaus chrysippus petilia* (Linnaeus, 1758)**

This lovely butterfly breeds on native and introduced plants in various parts of SA but none of the foodplants are recorded on K.I. It is a wanderer with endurance either alone or in rather loose groups and may appear anywhere in the state, often at unexpected times. The species is a reasonably regular visitor to K.I. and has been recorded from September to April from east to west, more often near the north coast (even on the coast). Often a few butterflies will be seen within a short period, sometimes just an individual but never large numbers. One of these butterflies was disturbed into flight by the author not far up the steep hill facing Kangaroo Beach on the north (west) coast on 6th June 1998 in sunny but cold conditions and following several very cold days of heavy rain and strong wind!

Danaus plexippus (Linnaeus, 1758)

Only one specimen has been recorded by Fisher (1985) who predicted the butterflies would be regular visitors to K.I. but there have been no further reported sightings. This is surprising given the numbers occurring just across Backstairs Passage and the legendary migrating ability of this species.

Lycenidae

Ogyris idmo halmaturia (Hewitson, 1862)

Unfortunately moderate searching has not produced further specimens of this very rare species, only a few possible sightings. The only specimens recorded from K.I. were one near Kingscote on 20th November 1886 (type male) and one from Rocky River in Flinders Chase in December 1934 (SA Museum). Sufficient habitat and host ant (*Camponotus terebrans*) presence suggest the species should still be present on K.I.

Ogyris otanes (C. Felder & R. Felder, 1865)

Rare on the mainland this fascinating butterfly has found a stronghold on Kangaroo Island where in some areas it colonises its foodplant *Choretrum glomeratum* at a much higher rate than is usual (often only about one percent). The major populations are in and near public and private areas of native vegetation on Dudley Peninsula and adjacent to the south coast in calcareous sands. The species is now rare or absent from central and northern K.I. despite roadside *Choretrum* but there is a population in Beycra CP south of Kingscote. The species has an obligatory relationship with the same generally plentiful sugar ant as *O. idmo*.

Colonised plants have an ant hole against or close to the plant base. Eggs are usually laid on the main plant stem in or near the entrance to the ant nest. Larvae emerge from the ant nest at dusk as well as later at night and ascend the plant, constantly attended by ants, to scour the outer foliage which turns brownish in time. The larvae are light sensitive and move quite rapidly back down into the ant hole if disturbed. They feed at least into May, overwintering as larvae although it is probable that a pupa formed in autumn overwinters as such. Pupation occurs within the ant nest from which the adult must safely crawl to emerge into the open. They are on the wing from October and peak in late November but broods are spread to such a degree that all stages may be present together in one area. Consequently adults should be present to a greater or lesser degree through summer into March. Females, attracted by the presence of ants and probably the larvae, mostly lay eggs on plants that are already being used for breeding with the result that bushes can be severely damaged. Adults frequent clearings near their foodplants and rest on the ground but also settle on foliage. Ironically small disturbances to conservation parks such as cleared tracks (used or disused) are beneficial both to the butterfly and its foodplant. Males fly to nearby hilltops but also fly over the high points of tracks. On 22nd November 2002 butterflies were flying onto the roadway and into clearings beside it, close to the beach at D'Estrees Bay, out of Cape Gantheaume CP which had been burnt just under 6 years previously. *C. glomeratum* regenerates well after fire but only from seed (B. Overton) and takes 2 to 3 years to reach usable size. The healthy population found shows the species can recolonise relatively rapidly, at least nearer the edges of the burnt areas.

One 'active' bush was observed growing on the edge of a meat-ant mound which by day looked impossible but night revealed *C. terebrans* walking over the now quiet meat-ant mound and attending larvae in the bush!

Candalides (Erina) acasta (Cox, 1873)

Although the foodplants *Cossytha pubescens* and *C. globello* are widespread and common and in profusion on some roadsides, this species, although widespread, is much less common than expected. Earlier

specimens recorded have been taken in December (Fisher, 1985; L. Hunt); recently low numbers of adults have been observed in October at Vivonne Bay by D. A. Young.

***Candalides (Erina) hyacinthina simplex* (Semper, [1879])**

This species and its foodplant *Cassytha melantha* are widespread on the Island but the butterfly is not common. In eastern and central K.I. adults were seen regularly near their foodplants in mid September 2001 whereas only occasional specimens have been seen in later months. D. A. Young has reported good numbers of adults in spring at Vivonne Bay. The species appears to be most numerous in early spring however records extend to late March when 2 males were hilltopping at Prospect Hill in the late afternoon.

***Nacaduba biocellata biocellata* (C. Felder & R. Felder, 1865)**

This lovely small butterfly is moderately common on K.I. but is not very regular or predictable in its appearances. It has a remarkable ability to locate acacias having the buds and flowers on which it breeds and around which it is most often seen. Moderate numbers have been observed in early June 1995 on Dudley Peninsula and in the first week of June 1998 females were laying eggs on *A. myrtifolia* in early bud in the north west. At the other end of the acacia flowering season a few adults were present near *A. retinoides* var *uncinata* (coastal swamp wattle) at D'Estrees Bay on 22nd November 2002. Adults, then, are likely to be rare or absent in summer, appearing as the early (June flowering) acacias come into bud and peaking in September and October. This species is very mobile and does not appear at the same places each year. It is quite possible that there is exchange with the mainland.

***Theclinesstes albocincta* (Waterhouse, 1903)**

This species is usually only present in low numbers despite plentiful foodplant (*Adriana quadripartita*) on Dudley Peninsula and near the south coast with small occurrences on the north coast. Adults may be on the wing from September to April. A few will usually be present on high dunes or hilltops in the vicinity of foodplants but it is unusual to see adults flying near their foodplants and eggs and larvae are very sparse on the male buds that often carry medium to high densities elsewhere in SA. The only occasion larvae were found in good numbers was on very young *A. quadripartita* plants near Prospect Hill in late March. The leaves showed characteristic scouring and larvae were attended by the sugar ant *Campanatus terebrans*. Elsewhere on the Island larvae are attended by small black ants.

***Theclinesstes miskini miskini* (T. P. Lucas, 1889)**

A butterfly taken by R. Mayo near American River on 1st November 1985 has been identified as this species. Further specimens of this species need to be obtained to verify its presence as field specimens can be difficult to distinguish from the very similar *T. albocincta*.

***Theclinesstes serpentata serpentata* (Herrich-Schäffer, 1869)**

This species has been recorded on Dudley Peninsula, D'Estrees Bay on *Atriplex cinerea* (Fisher, 1985) and Vivonne Bay in November (D. A. Young). Recorded foodplants for the Island occurring coastally and inland are *Atriplex* spp., *Chenopodium* spp., *Rhagadia* spp. and *Einadia nutans*. This widespread and very successful species should be present wherever its foodplants occur in sufficient quantity and condition in the warmer months.

***Nealucia agricola agricola* (Westwood, [1851])**

Occurs widely and in good numbers in areas of native vegetation where its food plants *Daviesia* spp., *Dillwynia* spp., *Pultenaea* spp. (18) and *Eutaxia micraphylla* occur. The one annual flight period is about a month from mid November peaking in late November.

***Lampides boeticus* (Linnaeus, 1767)**

This widespread migratory species is usually uncommon on K.I. A small number of butterflies (some well worn) were observed both in Kingscote and in the De Mole River area in the first days of September 1995 suggesting an August emergence. In October 2001 one male was at the top of Prospect Hill and the species was locally numerous on roadside *Dipogon lignosa* at Roper's Gums (central K.I.) but was not present at this location in surrounding years. Occasional adults were in the Vivonne Bay area in spring 2003 (D. A. Young). Foodplants present on the Island include *Gompholobium ecostotum*, *Kennedia prostrata*, *Pultenaea tenuifolia*, *Swoinsono lessertiifolia*, *Templetonia retusa* and *Lotis* species as well as introduced legumes including peas, beans and lupins. The butterfly will probably be locally common on concentrations of foodplant at diverse locations and times but otherwise uncommon. It is very probable that there is migration to and from the mainland.

***Zizina labradus labradus* (Godart, [1824])**

This common species which has been described as ubiquitous also uses many native and introduced legumes as its foodplants including *Medicago* spp. (medics), and *Trifolium* spp. (clovers) which are widespread in pastures making this species both numerous and widespread. It flies from September to April.

Discussion

Butterfly flight times may be altered by abnormal weather patterns. There remains the potential for further species to be found. Large trackless and inaccessible areas in Flinders Chase NP and Cape Gantheaume WA may yet hold a few secrets. Present populations of butterflies should remain fairly stable as little clearing is now taking place but fires which burn very large areas and/or occur too frequently must cause significant short to medium term damage to some populations. Species or subspecies occurring on Kangaroo Island have not been distinguished from those on the mainland despite the period of isolation. Braby (2000) suggested adults of *Marosingo trimaculato* from K.I. warrant closer examination as Atkins (1994a) noted that the underside ground colour of a few reared specimens was a richer reddish-brown, similar to *M. dirphia*.

Acknowledgements

D. A. Young contributed valuable information from his observation of butterflies in the Vivonne Bay area. B. Overton provided information on the distribution of some foodplants and on recovery after fire. R. Grund advised of the presence of several significant foodplants on the Island. D. Thomas assisted with some field work.

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Some Notes on the Sun-moths, Lepidoptera: Castniidae

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Introduction

This fascinating family of Lepidoptera strongly resembles the butterflies in that each group is largely diurnal, has clubbed antennae and broad and often brightly coloured wings. However, modern taxonomic studies have shown that the Castniidae are more closely allied to the families Brachodidae and Sesiidae and more distantly to the Cossidae.

The Castniidae are represented in Central and South America, Southeast Asia and Australia. Little is known of the Southeast Asian species, which all belong to the genus *Tascino* and appear to breed and fly in the rainforest canopy. The Australian fauna consists of 22 named species and up to as many again, which are yet to be described. All of the Australian species have been allocated to the genus *Synemon*.

Notes on some Castniidae of southeastern Australia

Very broadly, the Australian species appear to fall into four main groups. The larvae of the first group feed inside the rhizomes of *Lamandra* spp. *Synemon jecoria* is the only Victorian species belonging to this group.

So far as known, the larvae of the remaining groups feed on native perennial grasses and sedges. In most cases these larvae have adapted to cope with wildfire, predation and potentially dry conditions by completing their development underground, where they appear to feed on the roots of their respective host plants. Adults of *Synemon parthenoides* and *Synemon* sp. aff. *discalis* have been found to have emerged within days of a fire burning across their shared habitat in the Victorian Big Desert.

A notable exception to this rule are the larvae of *Synemon mognifico*, an attractive species that occurs in the sandstone scarps and plateaux of coastal New South Wales. This species has larvae that commence feeding inside the tillers of the host plant and later construct underground feeding galleries against its rhizomes. See Common and Edwards (1981).

In much of southern Australia, the subterranean early stages of the grass feeding species has inadvertently led to a dramatic decline in their distributions, after European settlement. Any disturbance, through ploughing and other types of cultivation and/or excessive invasion of exotic grasses and forbs leads to their disappearance from breeding areas. The vast reduction of native perennial grassland in Victoria has caused populations of these species to become isolated. One species has not been seen in Victoria since the early 1900's and is now presumed to be extinct (*Synemon theses*). Others appear to be restricted to one or two relatively small locations.

Therefore, the management of remnant native grasslands is important in the preservation of these species. Such areas need to be kept free of introduced weeds and regularly burnt, mown or grazed. Unrestricted growth causes an accumulation of dead plant material that provides cover for predators and reduces the extent of acceptable sites for oviposition.

....continued p. 95

Victorian Sun-moths Lepidoptera: Castniidae

by P. Marriott

Pale Sun-moth *Synemon selene* Klug, 1850

At least 8 locations have been identified. There is strong evidence to suggest that the species is parthenogenic. Though historically recorded from SA it is believed to be extinct there.

Size: 35 – 47 mm

Flight time: Early February to early March.

Foodplant: probably *Astrodanthonia setaea* (Bristly Wallaby Grass)

The four illustrated morphs are distinct forms. The species in the Victorian populations appears to be parthenogenic, so it is likely that these forms are developing independently. The fifth morph (not shown) is very close to the Pale morph.

The Pale morph: four (possibly six) sites. Status: Endangered

The Dark morph: four known sites. Status: Endangered

The Nhill morph: one site. Status: Critically endangered.

The Narrow-winged morph: two sites. Status: critically endangered

Terrick Terrick morph: one site. Status: endangered.

Golden Sun-moth *Synemon plana* Walker, 1854

Known from several localities in Western, Northwestern and Northern Victoria. Historical records indicate its presence in the grasslands near Melbourne – Altona, Broadmeadows, Keilor, Gisborne and Glenroy. The most recent of these is near Riddell in 1983 so it is possible it is still extant in this area.

Size: Male 35 mm, Female 31 mm. The species is distinctly dimorphic.

Flight time: November to January. There is a series possibly collected in March.

Status: Protected

Notes

The status of the species is from the NRE 1999 list *Threatened Invertebrate Fauna in Victoria*.

The information has been sourced from

- Flora and Fauna Guarantee Action Statements prepared by Fabian Douglas.
- Melbourne Museum Collection

Common names are those used by Fabian Douglas in his papers.

Wingspan is defined as being the distance between the wing tips of properly set specimens.

The specimens presented are from the various collections held by the Museum.



Pale Sun-moth
Synemon selene
Pale morph



Pale Sun-moth
Synemon selene
Dark morph



Pale Sun-moth
Synemon selene
Nhill morph



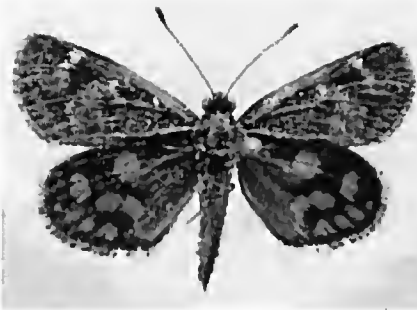
Pale Sun-moth
Synemon selene
Narrow-winged morph



Golden Sun-moth
Synemon plana
Male



Golden Sun-moth
Synemon plana
Female



Orange-spotted Sun-moth
Synemon parthenoides



Reddish-orange Sun-moth
Synemon jcaria



Small Orange-spotted Sun-moth
Synemon discalis



Orange Sun-moth
Synemon nias



Striated Sun-moth
Synemon collecta



Cryptic Sun-moth
Synemon theresa

Orange-spotted Sun-moth *Synemon parthenoides* R Felder, 1874

Widespread in western, northern and central Victoria.

Size: 35 – 45 mm

Flight time: November to early December

Foodplant: *Austrodanthonia* species (Wallaby Grasses)

Status: Secure

Reddish-orange Sun-moth *Synemon jcaria* R. Felder, 1874

Known from Big Desert and Wimmera.

Size: 35 – 38 mm

Flight time: Late January to mid March

Foodplant: *Lomandra effusa* (Scented Mat-rush)

Status: Vulnerable

Small Orange-spotted Sun-moth *Synemon discalis* Strand, 1911

Known only from two locations in the Big Desert and Hattah.

Size: 30 – 35 mm

Flight time: October

Foodplant: *Ghania lanigera* (Desert Saw-sedge)

Status: Critically endangered

Note: The insect illustrated has most features associated with this species.

Orange Sun-moth *Synemon nias* Klug, 1850

Known only from two locations in the Big Desert and Hattah.

Size: 27 – 30 mm

Flight time: Mid October to mid November

Foodplant: ? *Astrodanthonia setaea* (Bristly Wallaby Grass) and ? *Austrostipa* sp.

Status: endangered

Striated Sun-moth *Synemon collecta* Swinhoe, 1892

Known from only one Victorian location near Corryong.

Size: 39 – 41 mm

Flight time: Late December to mid January

Foodplant: *Austrodanthonia laevis* (Smooth Wallaby Grass)

Status: critically endangered

Cryptic Sun-moth *Synemon theresa* R. Felder, 1874

Historic records from Ararat, Castlemaine and Beechworth.

Size: 31 – 35 mm

Flight time: Late January to mid March

Foodplant: Unknown possibly *Austrodanthonia* Spp. (Wallaby Grass)

Status: extinct

Synemon selene (the Pale Sun-moth) is a remarkable species. The first author has determined that the Victorian populations are parthenogenetic. This was done by conducting a series of experiments, which demonstrated that variable percentages of larvae hatched from cohorts of ova that were not fertilized by spermatozoa. No males exist in collections of this species from Victoria. There have been males taken in South Australia though it appears that the species is now extinct in that state. Furthermore, five morphs or forms of the species have developed within Victoria. In some instances two or three of these morphs co-exist in certain populations, but due to their parthenogenetic state are unable to interbreed.

A population of this species at Nhill in western Victoria is unique because it is represented by a morph that, to date has been found nowhere else. Initially, the first author discovered a specimen of this morph (from Nhill) in the Melbourne Museum collection, that was dated 1902. A thorough search resulted in the discovery of an extant population in an area of Nhill that was just about to undergo residential development. Since 1902 the land had been used for grazing, but because it was under a number of separate titles it was never ploughed or developed further. As it was already known that a large population of *Synemon plana* (the Golden Sun-moth) occurred at the locality, the discovery of a unique morph of *S. selene* there as well greatly increased its conservation values. It also rendered it to be the only known locality in the world where *S. selene* and *S. plana* occur sympatrically.

Although existing residential development abuts the site, local naturalists, the Trust for Nature (Victoria) and the Hindmarsh Shire Council helped to have the area reserved so that it can be managed for the long term conservation of these endangered insects. However, an outstanding sum of \$20,000.00 is still required to purchase the remaining blocks of grassland land that should be included as a part of the existing reserve.

Of the eight *Synemon* species that occur in Victoria, only one, *S. porthenoides*, is regarded as secure. *Synemon* sp. aff. *discolis*, *S. plana*, *S. nais*, *S. collecto*, and *S. theresa* are all listed as threatened taxa under Schedule 2 of the Victorian *Flora and Fauna Guarantee Act* 1988. In the 1999 N. R. E. (now D. S. E.) *Threatened Invertebrate Fauna in Victoria* list, three of the five parthenogenetic morphs of *S. selene* are listed as endangered and two are listed as critically endangered, while *S. jearia* is listed as vulnerable.

Biological details of the eight Victorian *Synemon* species have not been fully documented, though it appears likely that they require at least two years to complete their life cycles. There is still much to be discovered about the Victorian Sun-moth fauna and the endangered status of most of the species emphasizes the present urgency to learn more.

Acknowledgements

Thanks are due to Dr Ken Walker, Catriona McPhee and Peter Lilywhite for permission to study the collection of Castniidae that is held at the Museum of Victoria. Thanks are also due to E. D. (Ted) Edwards (CSIRO Division of Entomology) who has provided the authors with a wealth of information on the Castniidae during the past thirteen years.

Sun-moths, Lepidoptera: Castniidae: A Reference Resource

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Notes on courtship refusal in *Signeta flammeata* (Butler) (Lepidoptera: HesperIIDae: Trapezitinae)

Kelvyn L. Dunn
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Summary

Details of a courtship refusal are given for the south-eastern Australian Trapezitine skipper, *Signeta flammeata* (Butler) based on a single convenience observation involving four attempts at wooing. The female repeatedly ignored the male, and gave no obvious rejection signals. Behavior is compared and contrasted with literature accounts for other Australian Trapezitine skippers and with known behavior among other butterfly groups in the Australia-Pacific region.

Observations

Locality: Hamilton Reserve (near Dewhurst), Upper Beaconsfield, Victoria (38°00'S, 145°27'E).

Habitat: hilltop-residential garden surrounded by pasture (opposite the reserve), about 200 m from stand of moist, eucalypt open forest with understorey of *Leptasperrum* and sedges (alt. 220 m a.s.l.).

Date: 24 February 2002, at 5:40 pm AEDT (1640h AEST)

Weather: sunny, temp. 25°C

Female (good condition) observed trailed by male (medium condition showing some wing wear). Trailing male flew between two and three metres above ground near a 30 m high flowering *Eucalyptus* sp. prob. *abliqua* (messmate stringybark) exposed to full, late afternoon sunshine. He flew below and behind female, maintaining about 10 to 15 cm separation, (estimated hypotenuse of 10-15 cm, with enclosed angle of about 45° beneath the horizontal). No tactile contact between the sexes occurred during flight.

Female landed with closed wings, and fed at low cream flower about two metres up. Male immediately settled behind, on same stem within two centimetres of her hindwing tornus. Upon landing, male closed wings, and within two seconds, female opened her wings to a 90° V-shape, displaying her sex. She maintained this stance whilst continuing to feed. Male then opened his wings widely - almost flat - clearly displaying his sex-brand. During male display, his legs continually shuffled, seemingly to maintain a secure grasp of stem, but no tactile stimulation of the female occurred.

After feeding for about ten seconds, female departed to another flower on same tree, several metres away, again quickly followed by trailing male, maintaining similar aerial courting position. Female visited separate clusters of the eucalypt flowers four times, and male repeated similar behavior to first encounter, on each courtship attempt.

Discussion

The site where the observations took place comprised a low-grade hilltop, regularly used by this and other hill-topping butterfly species, and included a concentrated foraging area associated with garden habitat. Both aspects constitute common sites for insect mating (Thornhill & Aleoek 1983) and, in combination, make sexual encounters more likely. As *S. flammeata* is a known hilltopping species (Braby 2000), females might be expected to ascend rises to search for mates, but this female had probably arrived to indulge in a late afternoon feeding bout.

The aerial position repeatedly adopted by the courting male, prior to landing, was similar to those adopted by *Taxidia daubledayi* (Dunn 2003), a member of a genus closely allied to *Signeta* (Atkins *et al.* 1991). Unlike the latter species, the flight of the courting *S. flammeata* male was not fluttery or slower than usual. Indeed, from a distance of ten metres the couple looked like two territorial males, except that the aerial positions were maintained. Also, the couple quickly landed; territorial males instead, often ascend above the canopy to resolve their altercation.

Contemporary butterfly ethologists (Atkins 1988, 1997; Dunn 1992, 1993, 2001) experientially and intuitively regard wing-flutter response by inspected settled females as a common refusal signal among Australian skippers, but with some exceptions (Common & Waterhouse 1981; Dunn 2003). During inspection, neither sex of *S. flammeata* gave flutter or wing-flick signals - behavior reported in *Taxidia peran* (Dunn 1992).

Atkins (1988, 1997) noted the absence of a feminine flutter response prior to mating in *Anisyncro cynone*, *T. peron* and *Trapezites eliena*, and in absence, that eotus occurred immediately. Nonetheless, this did not happen in *T. doubledayi* (Dunn 2003) and *S. flammeota* (this paper) - also members of Trapezitinae. In both these latter species, absence of flutter response did not equate to feminine acceptance, despite four separate inspections and attempts to woo her. Perhaps the female's opened wings (basking-like stance) instead, was an alternative signal, yet differing from that of *T. peron* and *T. doubledayi* in which females kept wings closed during refusal (Dunn 1992, 2003).

Alternatively, perhaps the female *S. flammeata* refused her suitor (who did not proceed to coital alignment) by departing each time he displayed his sex-brands. Escapism was also utilised in *T. doubledayi* and refusing females likewise gave no flutter response (Dunn 2003). In addition, a reluctant female of *Tr. elieno* initially refused a courtier by departure flight (escapism) - again without signalling a flutter response - but she submitted upon her second landing, after the persistent male aligned for copulation (Atkins 1997). Yet, in *T. daubledayi*, *Suniana sunias* (Hesperiinae), and *Hypolimnos bolino* (Nymphalidae), even though males may align for coitus, they are still often refused (Dunn 2001, 2003; Rutowski 1992) - apparently part of feminine assessment of male vigour (Rutowski 1979).

Finally, ignoring the harassing male by continued foraging is a potential secondary rejection strategy. This behavior is seen in various butterfly females from different families, including at least, *Delias nigrina* (Pieridae) (Dunn 2002), *T. doubledayi* (Dunn 2003) and *S. flammeata* (this paper) (Hesperiidae) in Australia, and *Popilio polytes* (female form *cyrus*) (Papilionidae) in Guam, Micronesia (pers. obs.). Nonetheless, either sex in some butterflies will also forage whilst mating. My records include a carrying male, of *Cressida cressida* (Papilionidae) in Australia (Dunn 2000), and a carried female, of *Zizina otis* (Lycenidae) in Yap Island (F.S. Micronesia), and hence, foraging behavior may be little more than an overriding instinct (Dunn 2003).

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THE ENTOMOLOGICAL SOCIETY OF VICTORIA Inc.



EXCURSION TO GEMBROOK No. 2

DATE: Saturday 28th and Sunday 29th February 2004.

TIME: From 10 am Saturday until Sunday afternoon.

PLACE: Gilwell Park Scout Camp. (Map: Refer to *Vic. Ent.* 33(5) Oct. 2003, p.73)

This excursion is a follow-up of the October one and is primarily to help extend the records of the flora and fauna of Gilwell Park. This will give records for a different time of the year.

Data will also be used for museum records and Entrecs.

Aquatic specimens will also be collected and night collecting using lights will be done.

Come along for an interesting, educational and sociable weekend with like-minded friends.

Accommodation is in bunk huts with kitchen facilities. Those who attended the October excursion had quite an enjoyable and rewarding time.

Further details in February 2004 Victorian Entomologist, or Peter Carwardine 9571 8958.

REPORT OF EXCURSION TO GILWELL PARK SCOUT CAMP

By P. Carwardine

The society undertook a survey excursion at the Scout Camp over the weekend of 25th and 26th October 2003. The property is about 90 hectares with a good natural cover of eucalypts and some acacias with an understorey that includes *Hakea*, *Banksia* and *Gahnia* species. There are two dams and a creek on the property. During Saturday afternoon part of the property was explored, then some members erected light traps for night collecting at one of the remote camp-sites where there was electricity and water available. Meanwhile Ian Endersby collected immature stages of aquatic insects.

After an evening meal in the excellent kitchen facilities we turned the light-traps on and returned to the Lodge where we had discussions and examined some of Ian's interesting specimens under a microscope. Peter Marriott also showed us an interesting method of preserving moths that he had developed. During the night we made two visits to the light-traps where we collected many moths and other insects including an ichneumon (Hymenoptera), an interesting bug, and various flies. The moths were mainly geometrids and noctuids, but other families were present and a *Opodiphthera helena* (formerly *Antheraea helena*) was also caught. A couple of Gum Emeralds (Geometridae) were taken on the glass of a telephone box. We seemed to do quite well in spite of patches of light rain passing through. Peter Marriott has been collecting at the park for a few years and has a list of a couple of hundred moths from there, but was able to add some new ones, one or two of which are not in the Museum of Victoria collection.

Aquatics collected were:

Ephemeroptera: Coluricidae: Colluriscoides sp. (mayfly)

Ephemeroptera: Leptophlebiidae (mayfly)

Tricoptera: Leptoceridae: Lectrides sp. (caddis)

Tricoptera: Leptoceridae: (caddis)

Hemiptera: Corixidae (waterboatmen)

Diptera: Chironomidae (gnats or midges)

Lepidoptera: Saturniidae: *Opodiphthera helena* (formerly *Antheraea helena*)

A list of moths may be published at a later date.

*Christmas Greetings to all
Members
and a Prosperous New Year!*

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CONTRIBUTIONS TO THE VICTORIAN ENTOMOLOGIST

The Society welcomes contributions of articles, papers or notes pertaining to any aspect of entomology for publication in this Bulletin. Contributions are not restricted to members but are invited from all who have an interest. Material submitted should be responsible and original. The Editor reserves the right to have articles refereed. Statements and opinions expressed are the responsibility of the respective authors and do not necessarily reflect the policies of the Society.

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Contributions may be typed on A4 paper or *preferably* sent to the Hon. editor on an IBM formatted disk in *Microsoft Word for Windows*, *WordPerfect* or any recognised word processor software with an enclosed hard copy. Contributions may also be E-mailed to Internet address: rtmcMahon@students.latrobe.edu.au

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DIARY OF COMING EVENTS

Friday 12 December General Meeting - Members Night

Members and visitors will give short talks and slide presentations including:

- Butterflies of the Federated States of Micronesia: Yap Island – video & talk by K.L.Dunn
- Introduction to the Lepidoptera Family: Arctiidae (Tiger Moths) – slides & talk by P.Marriott
- Insects of Melbourne's northern rural fringe – slide presentation by Ray McMahon

Please bring a plate. Tea and Coffee will be provided

January 2004 Council Meeting – not held

Friday 20 February 2004 General Meeting

Scientific names contained in this document are *not* intended for permanent scientific record, and are not published for the purposes of nomenclature within the meaning of the *International Code of Zoological Nomenclature*, Article 8(b). Contributions may be refereed, and authors alone are responsible for the views expressed.

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